

SEMICONDUCTOR DEVICE HAVING IMPROVED SHORT CHANNEL EFFECTS, AND METHOD OF FORMING THEREOF

ABSTRACT OF THE DISCLOSURE

Semiconductor device having improved short channel effects and method of forming thereof. One method includes forming a gate oxide over a substrate and a gate electrode over the gate oxide, and implanting impurities into the substrate using the gate electrode as an implant mask to form a lightly-doped region in the substrate. The method includes depositing second spacer material adjacent to the gate electrode, forming a first spacer on the second spacer material, and implanting impurities into the substrate and through a portion of the lightly-doped region using the first spacer as an implant mask to form a first junction region in the substrate. The method includes removing the first spacer, etching the second spacer material to form a second spacer adjacent the gate electrode, and implanting impurities into the substrate using the second spacer as an implant mask to form a second junction region in the substrate.